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10/579,954	05/22/2006	Yuan-Yong Yan	P03096US2A (BJ001d)	9285

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Bridgestone Americas Holding Inc
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EXAMINER

BOYLE, ROBERT C

ART UNIT	PAPER NUMBER
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1796

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/579,954	Applicant(s) YAN ET AL.	
	Examiner ROBERT C. BOYLE	Art Unit 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 September 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3, 21-25 and 36-47 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 21-25, 36-47 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. Any rejections stated in the previous Office Action and not repeated below are withdrawn. Specifically, the 112 rejection of claim 25 has been withdrawn in view of the amendment.
3. The new grounds of rejection set forth below are necessitated by applicant's amendment filed on September 21, 2009. In particular, claims 24-25 have been amended to reword limitations present previously and claims 36-47 have been added. This presents the claims in a manner with a scope not previously examined. Thus, the following action is properly made FINAL.

Claim Rejections - 35 USC § 103

4. Claims 1-3, 21-25, 36-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Hoxmeier** (US 6,258,891) in view of **Inoue** et al. (US 6,294,624).
5. As to claim 1, Hoxmeier teaches a method of making a polymer where a living polymer is reacted with a cyclic siloxane and to form a living block copolymer which can be functionalized with an amino group (abstract; column 1; lines 29-67; column 2, lines 4-41; column 3, lines 10-65; column 4, lines 20-46). Hoxmeier does not teach that the amino group has an active hydrogen on the amino nitrogen atom.
6. Inoue teaches the functionalization of a diene polymer with an amine compound where the amine compound has hydrogen atoms attached to it (abstract; column 2, lines 34-60; column

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3, lines 45-54; column 4, lines 36-51; column 5, lines 1-25; column 9, lines 20-67; Table 2). It would have been obvious to use the amines of Inoue with the method of Hoxmeier because Hoxmeier recites that amino compounds can be used as functional groups and Inoue teaches that amine functionalized polymers have a higher gel content, modulus elasticity, rolling resistance index and wet skid resistance index (Inoue: Table 2).

7. As to claims 2-3 and 21-23, Hoxmeier teaches hexamethylcyclotrisiloxane and octamethylcyclobutasiloxane (column 3, lines 10-31; column 4, lines 20-46).

8. As to claims 24-25, 36-37, Inoue teaches the copolymer is a copolymer of butadiene and cyclooctadiene (column 9, lines 20-67) and Inoue teaches using butadiene and styrene copolymers (column 1, lines 11-13; column 7, lines 1-11). Inoue does not specifically teach the copolymers are 'random'. However, random copolymers are instantly envisaged in the genus of copolymers because there are only two species in the copolymer genus, random and block copolymers. In the alternative, Inoue teaches copolymers that are random because both types of monomers are added together before polymerization, which would form random copolymers (Inoue: col. 9, ln 20-36).

9. As to claim 39, Inoue teaches water is present in the solvent (col. 9, ln. 24-26).

10. As to claim 40, Hoxmeier teaches a method of making a polymer where a living polymer is reacted with a cyclic siloxane and to form a living block copolymer which can be functionalized with an amino group (abstract; column 1; lines 29-67; column 2, lines 4-41; column 3, lines 10-65; column 4, lines 20-46). Hoxmeier does not teach that the amino group has an active hydrogen on the amino nitrogen atom or that the solvent is an organic solvent. It is noted that Hoxmeier teaches the reaction occurs in molten polyethylene (col. 4, ln. 20-34).

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Molten polyethylene is the reaction medium (ie: solvent) and is organic, so it would have been obvious that the reaction medium is in an organic solvent.

11. Inoue teaches the functionalization of a diene polymer with an amine compound where the amine compound has hydrogen atoms attached to it in a benzene solvent (abstract; column 2, lines 34-60; column 3, lines 45-54; column 4, lines 36-51; column 5, lines 1-25; column 9, lines 20-67; Table 2). It would have been obvious to use the amines of Inoue with the method of Hoxmeier because Hoxmeier recites that amino compounds can be used as functional groups and Inoue teaches that amine functionalized polymers have a higher gel content, modulus elasticity, rolling resistance index and wet skid resistance index (Inoue: Table 2).

12. As to claims 41-45, Hoxmeier teaches hexamethylcyclotrisiloxane and octamethylcyclobutasiloxane (column 3, lines 10-31; column 4, lines 20-46).

13. As to claim 47, Inoue teaches water is present in the solvent (col. 9, ln. 24-26).

14. Claims 39, 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Hoxmeier** (US 6,258,891) in view of **Inoue** et al. (US 6,294,624) and **Schreffler** (US 2002/0128426). The discussion with respect to Hoxmeier and Inoue as set forth in paragraphs 4-13 above is incorporated here by reference.

15. As to claims 39, 47, Hoxmeier teaches a method of making a polymer where a living polymer is reacted with a cyclic siloxane and to form a living block copolymer which can be functionalized with an amino group (abstract; column 1; lines 29-67; column 2, lines 4-41; column 3, lines 10-65; column 4, lines 20-46). Inoue teaches the functionalization of a diene polymer with an amine compound where the amine compound has hydrogen atoms attached to it

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(abstract; column 2, lines 34-60; column 3, lines 45-54; column 4, lines 36-51; column 5, lines 1-25; column 9, lines 20-67; Table 2). Hoxmeier and Inoue do not teach a specific polar coordinating compound.

16. Schreffler teaches functionalizing polymers formed from anionic polymerization (abstract) where a polar coordinating compound is added (§ 30-32). It would have been obvious to use the polar compounds of Schreffler because polar coordinators promote randomization and control vinyl content (§ 31).

17. Claims 1-3, 21-25, 36-38, 40-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Hoxmeier** (US 6,258,891) in view of **Labauze** (US 5,811,479).

18. As to claim 1, Hoxmeier teaches a method of making a polymer where a living polymer is reacted with a cyclic siloxane and to form a living block copolymer which can be functionalized with an amino group (abstract; column 1; lines 29-67; column 2, lines 4-41; column 3, lines 10-65; column 4, lines 20-46). Hoxmeier does not teach that the amino group has an active hydrogen on the amino nitrogen atom.

19. Labauze teaches functionalizing diene polymers with a cyclic siloxane followed by an amine with hydrogen atoms attached to the nitrogen atom (abstract; column 2, line 2-column 4, lines 7; column 4, line 62-column 5, line 19; column 8, line 46-column 11, line 5). It would have been obvious to use the amines of Labauze with the method of Hoxmeier because Hoxmeier recites that amino compounds can be used as functional groups and Labauze teaches the amino group gives increased hysteresis properties of the polymer (column 11, lines 1-3; Tables I-III).

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20. As to claims 2-3 and 21-23, Hoxmeier teaches hexamethylcyclotrisiloxane and octamethylcyclobutasiloxane (column 3, lines 10-31; column 4, lines 20-46).
21. As to claims 24-25, 36-37, Labauze teaches using butadiene and styrene copolymers (column 3, lines 41-67; col. 8, ln. 46-50) and that the polymers may be statistical or random (col. 3, ln. 33-40).
22. As to claim 38, Labauze teaches the 1,2 microstructure of 4-80% (col. 3, ln. 41-67). This range overlaps the claimed range. It is well settled that where prior art describes the components of a claimed compound or compositions in concentrations within or overlapping the claimed concentrations a prima facie case of obviousness is established. See MPEP 2144.05; *In re Harris*, 409, F.3d 1339, 1343, 74 USPQ2d 1951, 1953 (Fed. Cir 2005); *In re Peterson*, 315 F.3d 1325, 1329, 65 USPQ 3d 1379, 1382 (Fed. Cir 1997); *In re Woodruff*, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936-37 (CCPA 1990); *In re Malagari*, 499 F.2d 1297, 1303, 182 USPQ 549, 553 (CCPA 1974).
23. As to claim 40, Hoxmeier teaches a method of making a polymer where a living polymer is reacted with a cyclic siloxane and to form a living block copolymer which can be functionalized with an amino group and that the PE wax is the solvent (abstract; column 1; lines 29-67; column 2, lines 4-41; column 3, lines 10-65; column 4, lines 20-46). Hoxmeier does not teach that the amino group has an active hydrogen on the amino nitrogen atom.
24. Labauze teaches functionalizing diene polymers with a cyclic siloxane followed by an amine with hydrogen atoms attached to the nitrogen atom (abstract; column 2, line 2-column 4, lines 7; column 4, line 62-column 5, line 19; column 8, line 46-column 11, line 5). It would have been obvious to use the amines of Labauze with the method of Hoxmeier because Hoxmeier

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recites that amino compounds can be used as functional groups and Labauze teaches the amino group gives increased hysteresis properties of the polymer (column 11, lines 1-3; Tables I-III).

25. As to claims 41-45, Hoxmeier teaches hexamethylcyclotrisiloxane and octamethylcyclobutasiloxane (column 3, lines 10-31; column 4, lines 20-46).

26. As to claim 46, Labauze teaches the 1,2 microstructure of 4-80% (col. 3, ln. 41-67). This range overlaps the claimed range.

27. Claims 39, 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Hoxmeier** (US 6,258,891) in view of **Labauze** (US 5,811,479) and **Schreffler** (US 2002/0128426). The discussion with respect to Hoxmeier and Labauze as set forth in paragraphs 17-26 above is incorporated here by reference.

28. As to claims 39, 47, Hoxmeier teaches a method of making a polymer where a living polymer is reacted with a cyclic siloxane and to form a living block copolymer which can be functionalized with an amino group (abstract; column 1; lines 29-67; column 2, lines 4-41; column 3, lines 10-65; column 4, lines 20-46). Labauze teaches functionalizing diene polymers with a cyclic siloxane followed by an amine with hydrogen atoms attached to the nitrogen atom (abstract; column 2, line 2-column 4, lines 7; column 4, line 62-column 5, line 19; column 8, line 46-column 11, line 5). Hoxmeier and Labauze do not teach a specific polar coordinating compound.

29. Schreffler teaches functionalizing polymers formed from anionic polymerization (abstract) where a polar coordinating compound is added (¶ 30-32). It would have been obvious

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to use the polar compounds of Schreffler because polar coordinators promote randomization and control vinyl content (§ 31).

Response to Arguments

30. Applicant's arguments filed September 21, 2009 have been fully considered but they are not persuasive.

31. Applicant argues that Hoxmeier does not teach functionalization with an amino group. This is not persuasive.

32. Hoxmeier states "The living block copolymer can be recovered directly to give PE-PDMS-O-Li which is a living polymer and has not been terminated. One could manufacture and sell the living polymer itself to others that could then react it to form other polymers and/or add other functionalities such as amino..." (col. 3, ln. 54-58). Because Hoxmeier teaches adding other functionalities such as amino groups, Applicant's arguments are not persuasive.

33. Because the amino groups are added to the living polymer after it is formed, "...could then react it..." (Hoxmeier: col. 3, ln. 57), using an amino group having an active hydrogen on it would not prematurely quench the initiator, but rather would quench the polymer after it was formed, to give a functionalized polymer.

34. As Hoxmeier specifically allows for the functionalization with amino groups, the use of the amines of Inoue would not be contrary to the teachings of Hoxmeier.

Conclusion

35. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ROBERT C. BOYLE whose telephone number is (571)270-7347. The examiner can normally be reached on Monday-Thursday, 9:00AM-5:00PM Eastern.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on (571)272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ROBERT C BOYLE/
Examiner, Art Unit 1796

/Vasu Jagannathan/
Supervisory Patent Examiner, Art Unit 1796